Waste Directives and their impact to the EU PV Industry

The European Directives 2002/96/EC on waste electrical and electronic equipment (WEEE) and 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (ROHS) have to be implemented by the Member States in 2004 and will have a significant impact on the PV industry.

The European PV industry is rapidly growing during last five years manufacturing and distributing high quality and environmentally friendly products for renewable energy production. PV products are carefully designed for long lifetimes above 25 years, for this reason the amount of end of life modules at present is quite small. Larger quantities are expected around the year 2020.

The ROHS directive restricts the use of several materials, e.g. of lead and cadmium, that may be present in small amounts in PV modules as well. An exceptional grant for such materials in photovoltaic products therefore must be achieved. (Similar exceptional cases are already included for other products containing even bigger quantities of hazardous components.) If PV products will be covered by the WEEE and ROHS directives materials like CdTe and CdS used in compound semiconductor modules and Pb from the frits used in the screen printed metallization of crystalline silicon cells or in solder alloys on the tabs should be included in the appendix of the ROHS directive (exceptions of material restrictions).
However, our Industry is young and needs time to get established before early regulations may provoke deep impact on key technological choices. The industrials are continually working on the improvement of their products in terms of efficiency, cost reduction, new fabrication processes and life time improvement. The costs of waste treatment are generally included in the costs of all components in the value chain but not yet for modules at the end of their life. The costs can be calculated between 0, 10 €/Wp and 0, 40 €/Wp depending on the type of module, transportation, waste treatment and disposal costs (*). As the situation is fluctuating it could be very difficult to implement these directives.
The European PV industry has already established voluntarily a running solution for high value recycling of their products that can easily be extended with growing demands and will be improved continuously.

EPIA proposes the following scheme: In a first stage to not include PV modules in the directive. PV production is not widely spread, concentrated in certain geographical areas, the amount of waste from production and installations is very small today. Thanks to the stable and enduring encapsulation of the modules no environmental pollution is expected. End of life modules are industrial waste (Oekopol study), further regulation may be required in some years. In the meantime, the industry will be engaged to adapt their technologies, fabrication processes as well as recycling and reuse possibilities in order to achieve by 2010 the requirements of the directives. The photovoltaic industry will work together with the authorities to provide necessary data and specify future waste treatment and regulation requirements.

Brussels 20.03.04

* Source: Deutsche Solar